

DIRECTOR OF CENTRAL INTELLIGENCE

Scientific and Technical Intelligence Committee

Soviet R&D Process and Resources Working Group

MINUTES: 19 Aug 1987
FBIS

1. Elaine LaCroix, NISC, presented a briefing and she, along with Bob Blunt, led spirited discussions on the flow of NIR and NIOKR. The models they presented were generated primarily from unclassified Soviet Writings (Enclosures 1 and 2). They have also developed a naval version of the standard OKR stages of the YeSKD (Enclosure 3). Some of the major points or observations made during the discussions were:

a. There have been personnel shifts from the defense to civilian industry in attempts to transpose the "successful" defense management model onto civilian industry; some of those managers who were shifted have been replaced and there is growing evidence that the efficiency of the defense model is being questioned. The results of the defense model demonstrate its effectiveness; however, priority of resources, materials and funding is a factor which may not have been thoroughly considered when defense management was blessed.

b. Several naval programs have been curtailed or stopped. Whether that is the result of technical problems, requirements shifts, funding issues or policy changes has not been discerned. Is there evidence of capital construction stops or decrements in industries other than shipbuilding?

c. The defense industries are being increasingly involved with civilian programs.

d. There is some evidence that the Gorbachev regime is promoting a defense philosophy of sufficiency rather than parity. Can defense programs stops or decrements be manifestations of that philosophy?

2. Captain Kim Williams of FTD elaborated briefly on an article he authored on the Soviet approach to the problem of guaranteed reliability of aerospace systems. A synopsis is at Enclosure 4. The analysis was predicated on the basis of an article written by G.V. Novozhilov, the head of the Ilyushin Design Bureau. The ostensible aim of the Novozhilov article was to address reliability issues in passenger aircraft. It is quite likely that concerns of reliability in passenger aircraft would apply to military aircraft and to other military systems. As aerospace weapon systems become more complex and sophisticated, the reliability factor becomes ever more sensitive. The Novozhilov article may be an attempt at formalizing an approach to reliability requirements if one has not already been codified.

Classified by: Multiple Sources
Declassify by: OADR~~SECRET~~

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3. [] Chief of FBIS/S&TC brought us up to date on capabilities and future directions of his group. A listing of analysts, specialty areas and their phone numbers is at Enclosure 5. Closer coordination between FBIS analysts and other IC analysts is encouraged. FBIS/S&TC is moving increasingly to automated data bases; the consequences will be, hopefully, more control over the published product, better readability and better response to requirements. Stan indicated that they would accept lists of interest areas in which IC is working over the next year or two. I think that the SPARWG should attempt to generate such a list in the areas we consider most critical. Bring your nomination to the October meeting. If, from our consolidated list, we isolate a (single) high profile area over the next six months or so, S&TC may assign a desk officer to the project. We should not miss this opportunity.

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4. As stated in an earlier message, our September meeting will consist of the "laser seminar" at []. Pass clearances to CIA/CIB, attention: []. Let [] know the number of people attending from your center/agency. Her phone number is [].

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5. The October meeting will be held at NSA on the 21st, beginning at 0930. Please pass clearances to DIRNSA along with the following information: full name, DOB, place of birth, social security number, civilian or military, grade and agency. Please let [] our POC for that meeting, know if you need a parking space.

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6. Progress, albeit slow, is being made on some of our other projects:

a. [] is working on a survey of the collection guide to determine if it needs updating. Please take a close look at it and let Bob have your inputs or suggestions at the October meeting.

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b. The Ad hoc SPAR - Production Working Group will probably meet at DIAC on 28 October. I'll contact you individually about representation at that meeting.

c. We already have several candidates to be considered for the RDA process emigre seminar, a longer-range undertaking. If you have any you haven't submitted, please get them into the queue, along with the purpose for their consideration.

5 Encls

Jack Coker
Jack Coker
Chairman, SPARWG

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Members Present:

Jack Coker (MSIC/AIAMS-YTT) Chairman

[redacted] A/FBIS)
(CIA/LDA)

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[redacted] (CIA/OSWR)

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Elaine LaCroix (NISC/DT-4)

[redacted] (CIA/SOVA)
CIA/DO)

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George Smith (DOE/LLNL)

Dana Townsend (Commerce/OFA)

Others Present:

Bob Blunt (NISC/DT-11)

Ernie Chase (FSTC/AIFRIC)

[redacted] (CIA/SOVA)

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[redacted] (DIA/DB)

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[redacted] A/FBIS)
(NSA/A42)

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Captain Kim Williams (FTD/TQTM)

Members Not Present:

[redacted] (DIA/DB-4)

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John Dardis (State)

[redacted] (CIA/OIA)

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Sandra Goldberg (FSTC/ID-1)

[redacted] (NSA/A434)

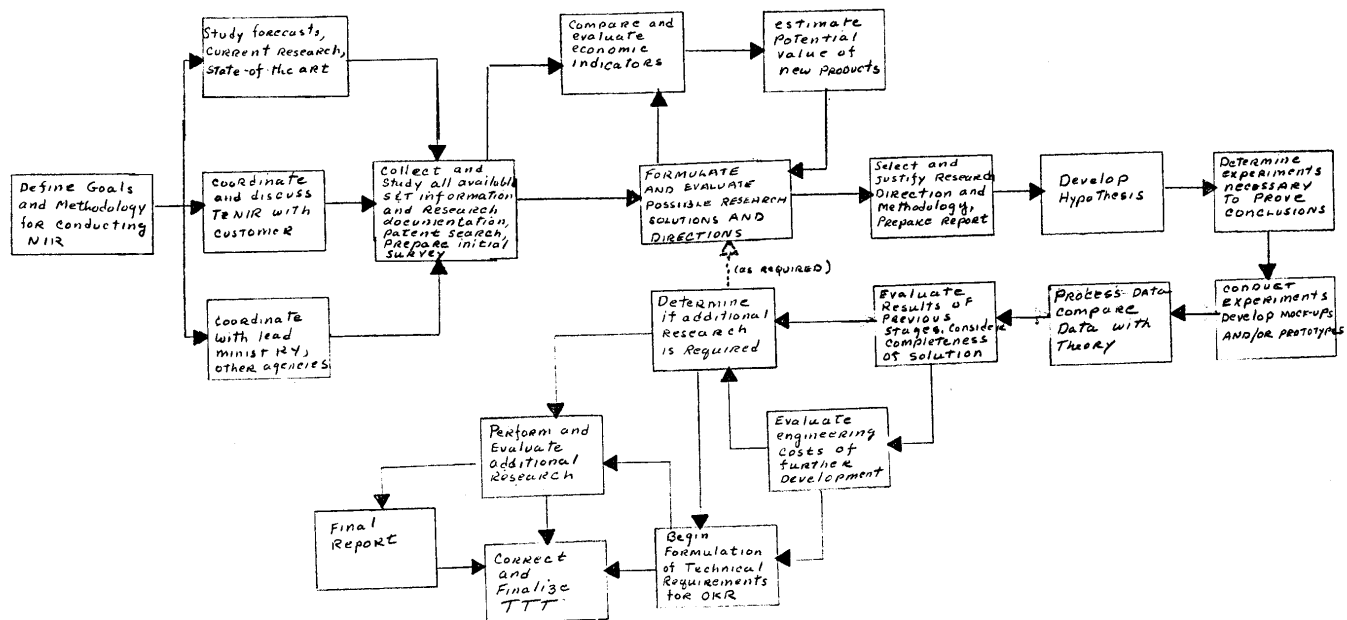
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[redacted] (DIA/DT-5A)

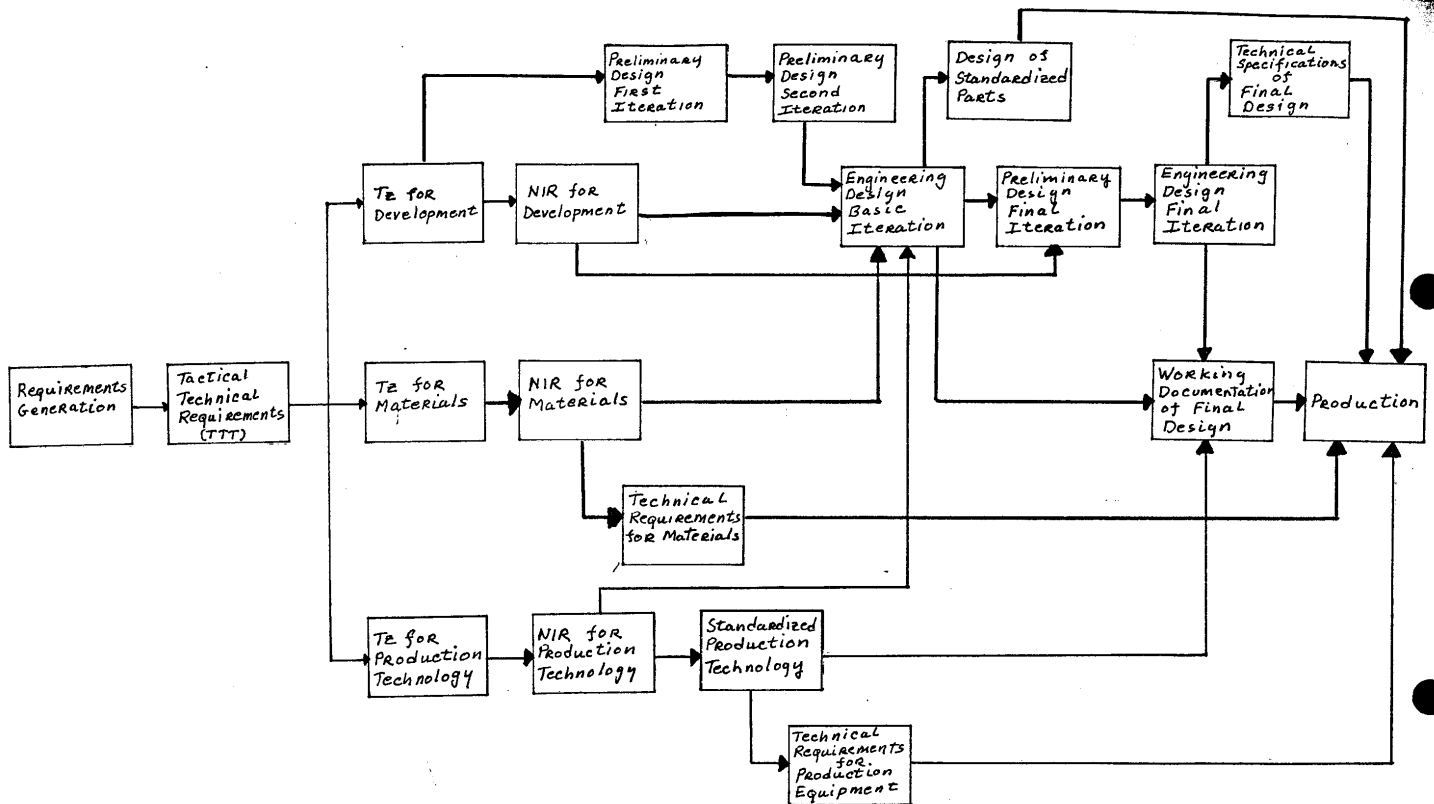
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Alicia Tauber (FTD/TQTM)

FLOW OF NIR



FLOW OF NICKR



NIR

Development Stage	Type of Activity	End Result	✓
Fundamental Research	Theoretical Research Experimental Research Selection of Ideas	Ideas, Theories, Discoveries Technical Ideas	
Exploratory Research	Conceptual Design Feasibility Studies	Applications Possibilities	
Applied Research	Proof of Concept	Inventions Development Methodologies	
	OKR (OTR)		
Design, Development and Application	Development of Technical Economic Requirements	technical Objective - Technical Proposal	
	- Preliminary Designing	Preliminary Design	
	Technical Designing	Contract Design (naut.)	
	Working Designing	Detailed Design (naut.)	
	Making, testing, and Refining of Prototype	Prototype (if applicable)	

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Title: Soviet Approach to The Problem of Guaranteed Reliability in Aerospace Weapon Systems [redacted]

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1. [redacted] Evident in the Novozhilov explanation of the Soviet designer's approach to reliability is a two-pronged program to cover: 1) full-scale development of the weapon system, and 2) refinement (dorabotka) extending from all test processes through operational employment. Each of these programs are further divided into three stages with accompanying major concerns:

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STAGE I - Flight safety, regularity of flight, redundancy, regularity of take-off.

STAGE II - Finished design with consideration for results of research and testing, results of modelling, ergonomic characteristics, and control, stability, and strength characteristics.

STAGE III - Acquired data on failures and faults as a basis to increase reliability, safety, and economy.

It follows that Stage I refers to the Soviet acquisition practice of the preliminary design or AVANPROYEKT stage, while Stage II is Full Scale Development, and Stage III implies modification work. It can further be said that whereas Stages I and II provide criteria for warranty conditions, it is Stage III that not only addresses system improvement but also decreases the magnitude of warranty problems.

2. [redacted] The underlying goals of such a comprehensive approach to reliability assurance, flight safety, and economy with operational maintainability playing a major role are stated as follows:

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- to ensure a system approach to the problems of reliability, safety, and operational maintainability in order to clearly differentiate functions to eliminate duplication, and coordinate efforts;

- to ensure the conduct of a single technical policy by all organizations participating in the development and operation of the system;

- to establish criteria of reliability, safety, and operational maintainability, identical for development and operational use;

- to ensure achievement of required reliability, safety, and operational maintainability, to verify during certification and employment;

- to establish a single program and plan of work to achieve required characteristics in the most effective manner; and
- to determine participants and deadlines for specific work.

3. [] Considering the existence of the Council of Designers and the interaction this body affords the aircraft design community, the likelihood of the Novozhilov approach should be widespread. Specifically, the design/development steps and actions are as follows:

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[] TECHNICAL PROPOSAL (Tekhnicheskoye Predlozheniye)

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- forecast of expected level of reliability, safety, and operational maintainability;
- establishment of control levels for reliability, safety, and operational maintainability by individual functional systems.

[] DRAFT DESIGN (Eskiznyy Proyekt)

- selection of structural patterns of functional systems with regard for reliability, safety, and operational maintainability;
- computation of probability of functional failure of systems;
- evaluation of the degree of danger of functional failures;
- evaluation of the overall level of flight safety;
- selection of the principles of operation, development of the system of maintenance;
- preliminary evaluation and computation of maintainability indices of the aircraft;
- issuance of levels of reliability, safety, and operational maintainability specified in the Technical Task for systems and components being developed by participating organizations;
- receipt of conclusions for reliability, safety, and operational maintainability based on the Draft Design.

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[] TECHNICAL (WORKING) DESIGN ((Tekhnicheskiiy (Rabochiiy) Proyekt))

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- detailed computation of probability of functional failures;
- evaluation of the interrelationship of functional failures of systems with regard for assembly and power factors;
- evaluation of the degree of danger of functional failures requiring additional check-out;
- compilation of programs to evaluate the degree of danger of functional failures by computation, modelling, stand and flight testing;
- control over fulfillment of requirements on reliability, safety, and operational maintainability by participating organizations;
- detailed computation of operational maintenance indices for functional systems and the aircraft as a whole with regard for varying operational conditions.

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TESTING

PROTOTYPE CONSTRUCTION, STAND AND FLIGHT

- quality assurance of prototypes;
- evaluation of consequences of functional failures on stand and during flight testing;
- re-computation of results of flight check-out of functional failures over the entire spectrum of expected operational conditions;
- evaluation of the degree of danger of functional failures of aircraft systems;
- evaluation of the level of flight safety;
- evaluation of the level of operational maintainability of the aircraft design during testing;
- elimination of deficiencies revealed during testing;
- award of certification of air-worthiness.

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SECRETItem 1

[] The briefings presented by State Department personnel at the March meeting of the Soviet R&D Process and Resources (SPAR) Working Group continued our streak of highly interesting, informative discussions. Don Graves presented his views of changes in the internal political situation in the USSR during the first year of the Gorbachev regime. He feels that Gorbachev has made significant progress in consolidating his political power by putting people loyal to him in the upper levels of the Party and government. These changes are relatively predictable and reflect Gorbachev's inclinations toward technocracy and aggressive shifts in foreign and internal affairs. Similarly, John Danylyk provided his insights into the economic changes Gorbachev has wrought during the past year and the problems he faces due to Soviet agricultural deficiencies, oil price drops and inertia deterring implementation of his efforts to increase productivity. Max Robinson of the Soviet desk described the status of US-USSR inter-governmental exchanges with emphasis on evolving scientific exchanges; medical, environment and energy will be the foci of upcoming exchanges. Glenn Schweitzer of the National Academy of Sciences described current and planned exchanges with ANSSSR, citing the soon to be consummated new agreement which will more clearly define the scope and intensity of these agreements.

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Item 2

[] George Kovach, State Dept, described a symposium which will be sponsored by the NATO Science Committee on "Assessment of Soviet Science" to be held 24-26 Sep 86 in Brussels. Speakers will be drawn from individuals with direct interface with Soviet science, Western academics studying Soviet science and those involved in exchange programs with the Soviets and will include the top people in the US such as Balzer, Perrott, McHenry, Grant, Feshbach, Schweitzer and Yamota. Participation will be limited to 120-140 attendees; Prof Henry Duran, Asst Secy Gen for Scientific & Environmental Affairs, NATO HQ, B1110, Brussels, Belgium should be contacted for additional information.

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Item 3

[] Two SPARWG members have been selected for the DCI Exceptional Analyst program; [] NSA will be studying the Soviet space program with emphasis on the manned space station and design experimentation while [] DIA/DB representative will examine the role of the KGB in the Soviet economy and how the Soviets will manage the information revolution. Our congratulations go to [] for this prestigious recognition but we also regret losing their very valuable participation on our working group.

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Item 4

[] The role of the inter-industry S&T complexes (MNTK) continues to loom as an potentially important reorganization of the Soviet R&D structure with significant implications for success of Gorbachev's technological initiatives (and thus for the interests of the SPARWG). [] OSWR, who is studying these complexes the Soviets have established to accelerate applications of R&D, has found relatively limited information from classified or unclassified sources. The few items he has found are included as enclosures to these

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minutes. It was decided to focus our continuing attention on these MNTKs to judge their success, particularly in contrast to other organizational changes such as production and scientific production associations. All members will pass all references on MNTKs to the chairman for distribution with meeting minutes.

Item 5

[] All SPARWG members were alerted to a roundtable discussion sponsored by the Defense Intelligence College on 21 Mar 86 on "After the 27th Party Congress: Whither the USSR?". (This roundtable was quite informative and was videotaped for replay by anyone who is interested.).

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Item 6

[] The next SPARWG meeting will be held on 8 April 1986 at the Foreign Science and Technology Center, Charlottesville, Va. Betty Jane Prufer will be our hostess and point of contact. The agenda will include briefings by FSTC personnel on the FSTC mission and organization, Integration Division external support programs, Soviet Chemical Warfare RDA program, Soviet design process for light tracked vehicles, Soviet directed energy (radio frequency) weapon resources and methodology for forecasting Soviet artillery developments. A fourteen-person government van will be available to transport meeting participants from Washington to/from Charlottesville. Please contact the chairman if you are interested in riding in the van. A map is enclosed for participants planning to drive on their own.

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5 Encl

1. Agenda []
2. Reports List []
3. MNTK References []
4. Project Planning in Soviet R&D []
5. Militarization of the Soviet Academy of Sciences []

Chairman, STIC SPAR Working Group

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**Soviet R&D Process and Resources Working Group
Scientific and Technical Intelligence Committee**

State Department

March 17, 1986

Room 1105

Chairman: **DIA**

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- 9:30: Don E. Graves, INR/SEE
Internal Politics in the USSR**
- 10:05: John T. Danylyk, INR/EC
Economics in the USSR**
- 10:40: Break**
- 10:45: Max N. Robinson, EUR/SOV
Scientific Exchanges with the USSR**
- 11:25: Glenn E. Schweitzer, NAS
The NAS-ANSSSR Exchange Program**
- 12:00: Lunch**
- 13:00: Business Meeting**
- 14:00: Adjourn**

Reports List

March 1986

"Summit Ends with Exchange Agreements", Science, p 1142, 6 Dec 85 ☐

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Fortescue, Stephen, "Project Planning in Soviet R&D", Research Policy, Vol 14, No. 5 (Oct 85) ☐ (copy enclosed with minutes)

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Spahr, P.D. and Nees, Lt. J.B., "Recent Construction at Missile and Space Development Facility", FTD Bulletin, FTD-2660P-127/33-86, 7 Feb 86 ☐

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Carmier, A.W. and Bolger, Lt.P.A., "SDI and Soviet Strategic Ballistic Missile Planning" (includes YeSKD impact) FTD Bulletin, FTD-2660-127/29-86, 6 Feb 86 ☐

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Thomas, John R., "Militarization of the Soviet Academy of Sciences", Survey, Vol 29, No. 1, Spring 1985 ☐ (copy enclosed with minutes).

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These documents can be obtained through your intelligence library or SPARWG Chairman.